USSR

ALYANSKIY, R. I., MANDEL', V. S., Nikolayev

"Maximum Rotating Speed of Conical Turbine Machine Rotor Envelopes"

Abstract: The limiting equillibrium of conical envelopes of constant thickness loaded with centrifugal and axissymmetrical contour forces and pressure is studied. Relationships are produced for determination of the maximum rotating speed with various conditions of attachment of the outer edge, from which graphs are constructed and recommendations are given for design of envelopes considering their interaction with other elements of the turbine machine rotor.

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USSR   UDC 632.95

MANDEL'BAUM, N. A., and NIKISHOVA, G. Ye.

"A Method of Synthesizing Esters and Amides of S-Hexachlorotetrahydro-1,4-
endomethylenephthalimidomethyl Thio- or Dithiophosphates"

USSR Author's Certificate No 265107, filed 12 Apr 69, published 7 Jul 70
(from RZh-Khimiya, No 3, 10 Feb 71, Abstract No 3N549 P)

Translation: Compounds (I) of general formula

where R is an alkyl, R' is an alkoxy or alkylamide group, X is oxygen or
sulfur, which are active pesticides, are synthesized by the reaction of
chloromethylimidochloroendic acid (II) with salts of alkylamides of
1/2

USSR

MANDEL'BAUM, N. A., and NIKISHOVA, G. Ye., USSR Author's Certificate No 265107, filed 12 Apr 69, published 7 Jul 70 (from RZh-Khimiya, No 3, 10 Feb 71, Abstract No 3N549 P)

O-alkylthiophosphates or with salts of thio- or dithiophosphoric acid. A solution of 2.5 g of $(EtO)_2PSSNa$ in 10 ml of water is added to 4 g of II, heated to 90°C, kept at this temperature for five hours, cooled, the residue is filtered, washed with water and dried. Compound I is obtained (R = Et, R' = EtO, X = S), yield = 85 percent, melting point 121-123°C. The following compounds (I) are similarly prepared (given are R, R', X, yield in percent, and melting point in °C): Et, BuNH, 0.75, 100-1; Pr, PrO, S, 72, 97-100; Et, EtO, O, 74, 100-3; Pr, PrO, O, 80, 73-5; Et, EtNH, O, 78, 11921; Et, PrNH, O, 76.5, 132-4; Et, iso-PrNH, O, 82, 142-4.

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USSR

UDC 632.95

DAVYDOV, L. A., AMOSOV, G. Ya., and MANDEL'BAUM, Ya. A.

"Construction and Study of a Mathematical Model of the Process of Producing Sinerphos (4-Nitrophenoxydiethylsulfide)"

V sb. Khim. sredstva zashchity rast. (Chemical Protection of Plants -- collection of works), No 2, Moscow, 1972, pp 11-18 (from RZh-Khimiya, No 22, 25 Nov 73, Abstract No 22N514 by A. F. Grapov)

Translation: The method of statistical planning of an experiment was used to find the optimum parameters of the process of producing sinerphos from $ClCH_2CH_2SEt$ (I) and $\pi-NO_2C_6H_4OH$ (II). I:II molecular ratio 1.07, KOH:II molecular ratio 1.45, reaction temperature 85°, time 56 min, yield of $\pi-NO_2C_6H_4CH_2CH_2SEt$ 88.4%.

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USSR

KORNOUKHOVA, M. V., LOMAKINA, V. I., MANDEL'BAUM, Ya. A., GAR, K. A.,
GOLYSHIN, N. M., BOKAREV, Ye. M., FEDOSEYENKO, L. G., and BODROVA, M. R.

"Reaction of Thiophosphate Hydrazides with Sulfochlorides"

Translation: Compounds with the general formula $R^1(RO)P(S)NHNHSO_2R^2$ (I) and
$R^3XP(S)(NHNHSO_2R^2)_2$ (II) (R = alkyl, R^1 = aryloxy, NHR, NR_2, R^2 2 R^3 = alkyl,
aryl, X = O or NH) are obtained from the reaction of $R^1(RO)P(S)NHNH_2$ (III) or
$R^3XP(S)(NHNH_2)_2$ (IV) with $ClSO_2R^2$. Examples. (1) 0.03 mole of Et_3N solution
in 30 ml of C_6H_6 at 20° is added to 0.03 mole of III (R = Et, R^1 = PhO) and 0.03
mole of Et_3N in 70 ml of C_6H_6. The mixture is mixed for 5 hours at 35 to 40°
and the sediment is filtered off. The filtrate is washed, dried, and the
solvent distilled off to obtain I (R = R^2 = Et, R^1 = PhO, yield 66%, melting
point 91-3°. I is obtained in a similar fashion (R, R^1, yield in %, melting
point in °C or $n^{25}D$ and d_4^{25} are given): Me, iso-PrNH, Me, 70, 1.5204, 1.2964;
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USSR

KORNOUKHOVA, M. V., et al., Khim. sredstva zashchity rast, No 2, 1972,
pp 194-199

Et, iso-PrNH, Ph, 56, 117-3; Et, iso-BuNH, Me, 84, 1.505, 1.1974; Ph, iso-
PrNH, Et, 68, 66-8; Et, Me_2N, PhMe, 30, 78-80; Et, Et_2N, Et, 50, 1.5148, 1.2035;
Et, Et_2N, PhMe, 55, 1.5350, 1.1756; Et, PhO, Ph, 55, 72-4. (2) 0.05 mole of
$PhSO_2Cl$ at 20° is added to a solution of 0.05 mole of IV (R^3X = PhO) and 0.05
mole of Et_3N in 100 ml of alcohol. The mixture is mixed for 6 hours at 20°
and 8 hours at 60-70°; the alcohol is distilled off in part. The sediment is
filtered off and the filtrate evaporated to obtain II ($R^2=R^3=$Ph, X = O), yield
56%, melting point 168-70°. II is obtained in a similar fashion (R^3X, R^2
yield in %, melting point in °C are given): EtO, Et, 50, 158-60, EtO, Ph, 30,
102-5; PhO, Me, 45, 173-5; PhNH, Me, 46, -. I and II have fungicidal and weak
contact insecticidal activity.

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USSR

UDC 632.95

STONOV, I. D., BAKUMENKO, L. A., USACHEVA, N. M., MANDEL'BAUM, YA. A., and
BAKANOVA, Z. M.

"A Herbicide"

USSR Author's Certificate No 347045, filed 9 Mar 71, published 6 Sep 72
(from RZh-Khimiya, No 10, May 73, Abstract No 10N605P by T. A. Belyayeva)

Translation: O-(2-Nitrophenyl)-O-methyl-N-n-propylamidothiophosphate (I)
in a dose of 1-2 kg/ha is proposed as a herbicide on fields of flax and
vegetable crops. With application before sprouting, the activity of (I) in
%: for oats 24-15, millet 98-100, beans 20-22, lettuce 17-67, beets
67-87, amaranth 75-88, flax and radish 0. The compound can be used in a
mixture with other active compounds to broaden its spectrum of action.

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USSR

MANDEL'BAUM, YA. A., ABRAMOVA, G. L., MEL'NIKOV, N. N., GEDOSEYENKO, L. G., GOLUBEVA, Z. Z., and ANDREYEVA, YE. I.

"Amides of O-Alkyl-S-alkyldithiophosphoric Acid -- Novel Organophosphoric Pesticides with Fungicidal and Insecticidal Properties"

V sb. Khim. sredstva zashchity rast. (Chemical Plant Protective Agents -- collection of works), No 2, Moscow, 1972, pp 205-209 (from RZh-Khimiya, No 19, Oct 73, Abstract No 19N525)

Translation: Studying the effect of the thiol radical on pesticidal properties of various compounds, a series of amides with the general formual $(RO)(R'S)P(S)NHR''$ (I) has been synthesized (R=Me, Et, Pro; R'=Pro, iso-Pro, But; R"=Me, Et, Pro, iso-Pro, iso-But). Toxicological evaluation showed I to exhibit fungicidal properties. Contact insecticidal activity of I is much weaker than the contact insecticidal activity of known preparations.

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USSR

NEL'NIKOV, N. N., MANDEL'BAUM, YA. A., ABRAMOVA, G. L., SMIRNOVA, N. S., GAR,
K. A., BOKAREV, YE. M., ORLOVA, V. I., and MAKEYEVA, V. F.

"Synthesis and Pesticidal Activity of Dithiophosphoric Acid Amides"

Translation: Studying the relationship of structure-pesticidal activity a
series of amides $R'R''N(ClCH_2CH_2O)P(S)SR'''$ (I) has been synthesized and
evaluated (R=alkyl; R'=H or alkyl; R'''=alkyl, Ph, substituted phenyl) the
compounds showing insecticidal and acaricidal activity. The following I
have been obtained (R', R'', R''', d_4^{20}, n_D^{20}, m.p. °C being reported):

Me, H, Pr, 1.2210, 1.5450, -; Et, H, Pr, 1.1956, 1.5380, -

Pr, H, Pr, 1.1660, 1.5300, -; iso-Pr, H, Pr, 1.1735, 1.5318, -; Bu, H,

Pr, 1.1485, 1.5320, -; iso-Bu, H, Pr, 1.1505, 1.5280, -; Me, H, Bu,

1.2018, 1.5410, -; Et, H, BU, 1.1795, 1.5360, -; Pr, H, Bu, 1.1500,

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USSR

MEL'NIKOV, et al., V sb. Khim sredstva zashchity rast., No 2, Moscow, 1972, pp 210-214

1.5285, -; iso-Pr, H, Bu, 1.1295, 1.5310, -; Bu, H, Bu, 1.1285, 1.5280, -; iso-Bu, H, Bu, 1.1285, 1.1545, -; Me, Me, Pr, 1.2123, 1.5450, -; Et, Et, Pr, 1.1313, 1.5180, -; Pr, Pr, Pr, 1.0831, 1.5040, -; Bu, Bu, Pr, 1.0601, 1.5031, -; Me, Me, iso-Pr, 1.1900, 1.5325, -; Et, Et, iso-Pr, 1.1233, 1.5160, -; Pr, Pr, iso-Pr, 1.0910, 1.5080, -; Bu, Bu, iso-Pr, 1.0732, 1.5090, -; Me, Me, Bu, 1.2133, 1.5500, -; Et, Et, Bu, 1.1123, 1.5160, -; Pr, Pr, Bu, 1.0827, 1.5160, -; Bu, Bu, Bu, 1.0581, 1.5060, -; Me, H, Ph, -, -, 124; Et, H, Ph, -, -, 65; Pr, H, Ph, -, -, 60; iso-Pr, H, Ph, -, -, 74-5; Bu, H, Ph, -, -, 45; iso-Bu, H, Ph, -, -, 78-9; Me, H, C_6H_4Cl-4, -, -, 118-9; Et, H, C_6H_4Cl-4, -, -,

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USSR

MEL'NIKOV, et al., V sv. Khim sredstva zashchity rast., No 2, Moscow, 1972
pp 210-214

71-2; Pr, H, C_6H_4Cl-4, -, -, 59-60; iso-Pr, H, C_6H_4Cl-4, -, -, 60-1;

Bu, H, C_6H_4Cl-4, -, -, 60-1; iso-Bu, H, C_6H_4Cl-4, -, -, 61-62; Me, Me,

C_6H_4Cl-4, 1.3632, 1.6081, -; Et, Et, C_6H_4Cl-4, 1.2700, 1.5705, -; Pr,

Pr, C_6H_4Cl-4, 1.2261, 1.5565, -; Bu, Bu, C_6H_4Cl-4, 1.1821, 1.5530, -;

Me, Me, Ph, 1.2561, 1.5720, -; Et, Et, Ph, 1.2223, 1.5675, -; Pr, Pr,

Ph, 1.1700, 1.5520, -; Bu, Bu, Ph, 1.1610, 1.5500, -; Me, Me, $C_6H_3Cl_2-$

2,5, -, -, 74-75; Et, Et, $C_6H_3Cl_2-2,5$, -, -, 70-1; Pr, Pr, $C_6H_3Cl_2-2,5$,

-, -, 66-7; Bu, Bu, $C_6H_3Cl_2-2,5$, 1.2763, 1.5660, -; Me, H, Ph, -, -,

74-5; Et, H, Ph, -, -, 73-4; Pr, H, Ph, -, -, 64-5; iso-Pr, H, Ph, -,
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USSR

MEL'NIKOV, N. N., et al., V sb. Khim. sredstva zashchity rast., No 2, Moscow, 1972, pp 210-214

-, 69-70; Bu, H, Ph, -, -, 59-60; iso-Bu, H, Ph, -, -, 83-4; Me, Me, Ph, -, -, 78-9; Et, Et, C_6H_5, -, -, 61-3; Bu, Bu, C_6Cl_5, -, -, 40-1; Me, H, $C_6H_4NO_2$-4, -, -, 69-70; Et, H, $C_6H_4NO_2$-4, -, -, 65-6; Pr, H, $C_6H_4NO_2$-4, -, -, 62-3; iso-Pr, H, $C_6H_4NO_2$-4, -, -, 60-1; Bu, H, $C_6H_4NO_2$-4, -, -, 62-3; iso-Bu, H, $C_6H_4NO_2$-4, -, -, 60-2; Me, Me, $C_6H_4NO_2$-4, -, -, 73-4; Et, Et, $C_6H_4NO_2$-4, -, -, 70-1; Pr, Pr, $C_6H_4NO_2$-4, -, -, 69-70; Bu, Bu, $C_6H_4NO_2$-4, -, -, 65-6.

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UDC 632.95

USSR

MANDEL'BAUM, Ya. A., LOMAKINA, V. I., KUTUZOVA, L. R.

"A Method of Synthesizing Dialkyl 1-Aryl-2-chlorovinyl Phosphates"

USSR Author's Certificate No 289732, filed 28 Jul 69, published 22 May 72
(from RZh-Khimiya, No 9, May 73, abstract No 9N494 by N. V. Lebedeva)

Translation: Compounds of the general formula $(RO)_2P(O)OC(R')=CHCl$ (I)
(R = alkyl; R' = chlorine-substituted or bromine-substituted Ph) are syn-
thesized by reacting $(RO)_2P(O)Cl$ (II) with compounds of the formula
$ClCH_2C(O)R'$ (III) in inert organic solvents in the presence of alkaline
agents with a yield of up to 85%. Example. 0.1 mole of II (R = Me) is
added to 0.2 mole of finely crushed NaOH in 300 ml of ether. The mixture
is heated to boiling, and a solution of 0.1 mole of III (R' = $2,4,5-Cl_3C_6H_2$)
in ether is slowly added. The reaction mass is boiled for 4 hours, allowed
to stand for ~16 hours, filtered, evaporated, and compound I (R = Me,
R' = $2,4,5-Cl_3C_6H_2$) is produced with a yield of 83%, melting point 94-5°.
By a similar method compound I is produced (R = Et, R' = $2,4,5-Cl_3C_6H_2$)
with a yield of 56%, melting point 77-78.5°. These compounds can be used
as insecticides.
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(4)

USSR   UDC 632.95

SEMENOVA, S. A., SIFOROVA, T. A., GAR, K. A., MANDEL'BAUM, Ya. A., ITSKOVA,
A. L., FETISOVA, V. F., NIKOLAYEVA, T. A., and SELEZNEVA, V. P.

"Acaricide"

USSR Author's Certificate No 265611, filed 3 Jul 68, published 7 Apr 72
(from Referativnyy Zhurnal -- Khimiya, Svodnyy Tom (I, I.-S), No 1(II), 1973,
Abstract No 1N450P by T. A. Belyayeva)

Translation: Compound of a general formula $(RO)(R'O)P(X)SCH_2CON(R'')SO_2(R''')$
(where R, R', R'', R''' = C_1 - C_4-alkyl, X = O or S) is suggested for use as
acaracide. Experimental data are presented on its aqueous emulsions under
laboratory conditions and the duration of its protective effect.

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USSR   UDC 632.95

MANDEL'BAUM, Ya. A., LOMAKINA, V. I., KORNOUKHOVA, M. V., and MEL'NIKOV,
N. N.

"Synthesis of Bis[β-alkyl(aryl)sulfonylhydrazides] of Thiophosphoric Acids"

USSR Author's Certificate No 332093, filed 26 Feb 70, published 17 Apr 72
(from Referativnyy Zhurnal -- Khimiya, Svodnyy Tom (I, L-S), No 1(II), 1973,
Abstract No 1N452P by T. A. Belyayeva)

Translation: A compound with a general formula $RP(S)(NHNHSO_2R')_2$ (I) (R =
alkoxyl, aroxyl, or amino group; R' = alkyl or aryl) is synthesized by the
reaction of $RP(S)(NHNH_2)_2$ (II) with $R'SO_2Cl$ (III) in the presence of HCl
acceptor in solvent (C_6H_6, alcohol). Example. To 0.25 mole II (R = EtO) in
150 ml C_6H_6 0.5 mole Et_3N is added at 40°C followed by a slow addition of
0.25 mole III (R' = Et). The reaction mixture is stirred for 2 hr at 60°, and
for 1 hr at 80°C, filtered at 70°C, and concentrated by evaporation. The
yield of I (R = EtO, R' = Et), m.p. 158-160°C, is 50%. Compound I prepared
in the same manner were characterized by (R, R', m.p. in °C, yield %, in that
order): EtO, Ph, 102-105 (alc.), 30; PhO, Me, 173-175 (ether), 45; PhO, Ph,
168-170, 56. Compound I possesses acaricidal and fungicidal properties.
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USSR   UDC 632.95

MANDEL'BAUM, Ya. A., ABRAMOVA, G. L., GOLEVLEVA, L. M., FEDOSEYENKO, L. G.,
ANDREYEVA, Ye. I., and PRONCHENKO, T. S.

"Fungicides"

Translation: Compounds of a general formula $(RO)R'HNP(S)SR''$ (I) ($R_1 = C_1 -$
C_3-alkyl or chloralkyl, R' and $R'' = C_1 - C_4$-alkyl) are suggested for use
as fungicides. They were tested on pure cultures of phytopathogenic fungi
and gummosis bacteria. The LD_{50} for rice weevil of these compounds was
determined. Compounds I are toxic for fungus mycelium, and compounds
$(EtO)PrHNP(S)SPr$ and $(PrO)PrHNP(S)SPr$ (Ia) are effective against Verticillium
cotton wilt and their increase the cotton yield 1.5 times.

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USSR   UDC 632.95

MANDEL'BAUM, YA. A., NIKISHOVA, G. YE., NAGAYUK, I. N., and   ZAKS, P. G.

"Phosalone"

V sb. Khim. sredstva zashchity rast. (Chemical Plant Protectants -- collection of works), vyp 1, Moscow, 1970, pp 25-28 (from RZh-Khimiya, No 13, 10 Jul 72, Abstract No 13N455 by T. A. Belyayeva)

Translation: The article shows the physical and chemical properties of phosalone, its toxicity, the method of producing it from (DLO)$_2$PSSNa and chloromethylchlorobenzoxazolone, and the method of analysis. A method is devised for chloromethylation of chlorobenzoxazolone. Phosalone can be used in the form of a 20% emulsion concentrate and a 30% wettable powder.

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USSR   UDC 632.95

BAKANOVA, Z. M., MANDEL'BAUM, YA. A., and MEL'NIKOV, N. N.

"Methylnitrophos"

V sb. Khim. sredstva zashchity rast. (Chemical Plant Protectants -- collection of works), vyp 1, Moscow, 1970, pp 14-17 (from RZh-Khimiya, No 13, 10 Jul 72, Abstract No 13N454 by T. A. Belyayeva)

Translation: The article shows physical and chemical properties of $(MeO)_2$ $(4-NO_2-3-MeC_6H_3O)PS$ and $(MeO)_2(6-NO_2-3-MeC_6H_3O)PS$ and a method for the synthesis and analysis of methylnitrophos (I). I is used in the form of a 25% emulsion concentrate.

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USSR   UDC 632.95

MANDEL'BAUM, YA. A., SOYFER, R. S., FEDOSEYENKO, L. G., GOLYSHIN, N. M.,
MEL'NIKOV, N. N.

"A Fungicide"

USSR Author's Certificate No 243998, filed 10 Jul 67, published 2 Nov 71
(from RZh-Khimiya, No 11, Jun 72, Abstract No 11N442)

Translation: O-Aryl S,S-di-(N-alkylcarbamoylmethyl) trithiophosphates (I)
are used for disinfecting seeds (cereal grains) against rust and mold fungi.
In a concentration of 0.003%, compound I is 100% effective in suppressing
growth of Botrytis cinerea, Fusarium noniliforme, Aspergillus niger and other
pathogenic fungi. The disinfectant is nontoxic for plants in a dose of 2 kg
per ton of wheat seeds and 4 kg per ton of oat seeds.

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USSR   UDC 632.95

MANDEL'BAUM, Ya. A., NIKISHOVA, G. Ye., and MEL'NIKOV, N. N.

"Method of Production of Chloromethylimides"

Translation: Chloromethylimides are intermediate products in the synthesis
of phthalophos and phozalone, produced by the reaction of the imide of the
corresponding acid with formaldehyde and HCl (acid) at a concentration of at
least 30%, at 55-60°C.   0.11 mol of a 37% solution of formaldehyde
and a 7-fold excess of a 36% HCl (acid) solution are added to 0.1 mol ph-
thalimide, heated to 55-60°, HCl (gas) is bubbled through for 8-10 hours, the
mixture is cooled and filtered. The precipitate is washed in water and dried,
producing chloromethylphthalimide, yield 95%, m.p. 130-2°. The filtrate is
returned to the process. Chloromethyl-6-chlorobenzoxazolone is produced
similarly, m.p. 120-3°, as well as chloromethylbromobenzoxazolone, m.p. 137°.

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USSR   UDC 547.26'118

MANDEL'BAUM, Ya. A., ITSKOVA, A. L., and MEL'NIKOV, N. N.

"Synthesis of O-Aryl O'-Alkyl Phosphites"

Abstract: The authors investigate the possibility of synthesizing alkyl
aryl phosphites in a single step from phosphorus trichloride, the correspond-
ing alcohol and phenol. Methanol was used as the donor of the hydroxyl
group.

$$PCl_3 + ROH + ArOH + CH_3OH \rightarrow (RO)(ArO)POH + 2HCl + CH_3Cl$$

Isolation of the O-aryl O'-alkyl phosphites is impeded by the symmetric
dialkyl- and diaryl phosphites formed as by-products. Chemical and physical
data are tabulated for eleven synthesized O-aryl O'-alkyl phosphites.

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USSR

MANDEL'BAUM, YA. A., SOYFER, R. S., BELOVA, L. A.

"Synthesis of Alkyl and Dialkylamides of O-phenyl-S-(N-Alkylcarbamoylmethyl)di-thiophosphoric Acids"

Abstract: In order to find new pesticides and to study the dependence of bio-
logical activity on structure, the alkyl and dialkylamides of O-phenyl-S-
(N-alkylcarbamoylmethyl)dithiophosphoric acids (I) were synthesized from the
corresponding amides of O-phenylchlorothiophosphoric acid [Ya. A. Mandel'baum,
et al., USSR Author's Certificate No 238554, 1968; Byull. izobr., No 10, 1969]
and the Na derivatives of the amides of thioglycolic acid in alcohol [R. S.
Soyfer, et al., USSR Author's Certificate No 255262, 1969; Byull. izobr., No
33, 1969]. The highest yields of compounds (I) were obtained from the dialkyl-
amides of O-phenylchlorothiophosphoric acids (higher than 50%).
     The compounds (I) were tested as insecticides, acaricides and fungicides.
They have high activity as systemic acaricides, frequently exceeding the acti-
vity of the standard, and high activity as fungicides.

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MANDEL'BAUM, YA. A., SOYFER, R. S., BELOVA, L. A., MEL'NIKOV, N. N.

"Synthesis of Derivatives of Aryl-S-(N-alkylcarbamoylmethyl)di- and trithiophos-
phates"

Abstract: A study was made of the possibility of synthesizing O-aryl-O-alkyl-
S-(N-alkylcarbamoylmethy)dithiophosphates from O-aryl-O-alkylchlorothiophos-
phates and amides of thioglycolic acid (a) and from O-aryldichlorothiophosphates,
amides of thioglycolic acid and sodium alcoholates in alcohol (b). One pro-
cedure resulted in greater than a 50% yield of the target compounds. A second
procedure gives a very low yield as a result of prevalence of the side processes
in the synthesis. A new series of O-aryl-S,S-di(N-alkylcarbamoylmethyl)trithio-
phosphates was synthesized from O-aryldichlorothiophosphates and Na-derivatives
of thioglycolic acid. The reaction takes place with the formation of a series
of side products. The compounds obtained have acaricidal and fungicidal activ-
ity. The formulas, some physical characteristics, yields and side compounds
are presented for the various reactions in tabular form. The two synthesis
methods used are represented as follows

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USSR

MANDEL"BAÚM, YA. A., et al., Zhurnal Obshchey Khimii, Vol XLII (CIV), No 1, 1972, pp 65-73

a) $\begin{array}{c} ArO \\ RO \end{array} P \begin{array}{c} S \\ Cl \end{array}$ + $HSCH_2CONHR'$ ⟶

b) $ArOPSCl_2$ + $NaSCH_2CONHR'$ + $RONa$ ⟶

⟶ $\begin{array}{c} ArO \\ RO \end{array} P \begin{array}{c} S \\ SCH_2CONHR' \end{array}$

2/2

USSR   UDC 547.26'118

KORNOUKHOVA, M. V., LOMAKINA, V. I., and MANDEL'BAUM, Ya. A., All-Union
Scientific Research Institute of Chemicals for Plant Protection

"β-Substituted Sulfonyl Hydrazides of Thiophosphoric Acids"

Abstract: Some sulfonyl hydrazides possess fungicidal and pesticidal prop-
erties. This study concerns the synthesis of β-sulfonyl hydrazides of
thiophosphoric acid ester amides and thiophosphoric acid ester diamides by
the reaction of the corresponding hydrazides with alkane(arana)sulfonyl
chlorides in the presence of triethylamine.

$$RO \diagdown$$
$$R' \diagup P S N H N H_2 + Cl SO_2 R'' + (C_4H_5)_3 N \longrightarrow$$
$$R'' \diagup N$$

$$RO \diagdown$$
$$\longrightarrow R' \diagup P S N H N H S O_2 R'' + (C_2H_5)_3 N \cdot HCl$$
$$R'' \diagup N$$

$$(R_2''N)_2 P S N H N H_2 + Cl SO_2 R'' + (C_2H_5)_3 N \longrightarrow (R_2''N)_2 P S N H N H S O_2 R'' + (C_2H_5)_3 N \cdot HCl$$
$$R, R'' = Alk, Ar; R' = H, Alk; R'' = Alk.$$

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USSR

KORNOUKHOVA, M. V., et al., Zhurnal Obshchey Khimii, Sep 71, Vol 41, No 9, pp 2004-2007

Analysis of the biological activity of these compounds indicates that sulfonyl hydrazides of the ester amides of the formula $\frac{RO}{R'}>PSNHNHSO_2R'$ possess fungicide activity, while bisdialkylsulfonyl hydrazides of bisdialkyl-thiophosphoric acid ester diamides of the formula $(R_2N)_2PSNHNHSO_2R'$ exhibit insecticidal properties. The structure of the above compounds are supported by IR and PMR spectra. Tables in the original article cite the radicals, yields, formulas and calculation of the new compounds.

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USSR

BAKANOVA, Z. M., MANDEL'BAUM, YA. A., SUPIN, G. S., MEL'NIKOV, N. N.,
and ABBAKUMOVA, N. V., All-Union Scientific Research Institute of
Chemical Plant Protectants

"Properties of Methylnitrophos and Methods for Its Analysis"

Abstract: Chemically pure methylnitrophos consists of two isomers,
viz. O,O-dimethyl-O-4-nitro-3-methylphenyl thiophosphate (70-75 per-
cent) and O,O-dimethyl-O-6-nitro-3-methylphenyl thiophosphate (25-30
percent). Isomer I is the principal active ingredient of commercial
methylnitrophos, isomer II the synergist for isomer I. Studies con-
ducted in 1964-1968 showed that methylnitrophos matches the insecti-
cidal properties of isomer I (Sumithion, Metathion). This is con-
firmed by data of the Ternopol' Agricultural Experiment Station on the
effectiveness of Metathion and methylnitrophos against the beet leaf
miner and beet leaf aphid, as well as by results obtained in experi-
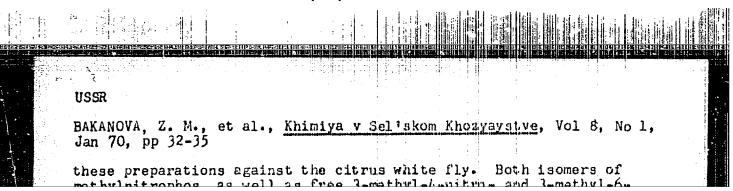ments of the Georgian Subtropical Laboratory on the effectiveness of

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methylnitrophos, as well as free 3-methyl-4-nitro- and 3-methyl-6-
nitrophenols were determined by the authors by the polarographic meth-
od. The article describes the analysis procedure.

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BAKANOVA, Z. M., et al., Khimiya v Sel'skom Khozyaystve, Vol 8, No 1,
Jan 70, pp 32-35

these preparations against the citrus white fly. Both isomers of
methylnitrophos, as well as free 3-methyl-4-nitrro- and 3-methyl-6-

CIRC ACCESSION NO--AP0124483
ABSTRACT/EXTRACT--(U) GP-0-   ABSTRACT. THE DIRECT SYNTHESIS OF P O SUB2
NC SUB6 H SUB4 O(CH SUB2)SUB2 SET (NITROFOS) (I) FROM P
NITROCHLOROBENZENE (II) AND HO(CH SUB2)SUB2 SET (III), IN THE PRESENCE
OF KOH AND METALLIC UC, WAS CARRIED OUT IN HCONME SUB2 OR ACNME SUB2 BUT
GAVE LARGE AMT. OF BY PRODUCTS; IN ME SUB2 SO, THERE ARE NO SIDE
REACTIONS. OPTIMIZATION OF THE REACTION CONDITIONS BY A STATISTICAL
PLANNING METHOD SHOWS THAT 87PERCENT I IS OBTAINED WITH 3.3:1 III-II,
1.2:1 KOH II, 0.06:1 CU II AT 34DEGREES WITH REACTION TIME 1.33 HR.

UNCLASSIFIED

TITLE--PROPERTIES AND METHODS FOR ANALYZING METHYLNITROPHOS -U-

AUTHOR-(05)-BAKANOVA, I.M., MANDELBAUM, YA.A., MELNIKOV, N.N., SUPIN,
   G.S., ABBAKUMOVA, N.V.

COUNTRY OF INFO--USSR

SOURCE--KHIM. SEL. KHOZ. 1970, 8(1), 32-5

DATE PUBLISHED--------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--ISOMER, ORGANIC PHOSPHOROUS INSECTICIDE, ORGANIC NITRO
   COMPOUND

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1990/1159   STEP NO--UR/0394/70/008/001/0032/0035

CIRC ACCESSION NO--AP0109276
                    UNCLASSIFIED

CIRC ACCESSION NO--AP0109276
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE PROPERTIES WERE GIVEN OF
  METHYLNITROPHOS, A MIXT. OF O,O,DIMETHYL,O,4,NITRO,3,
  METHYLPHENYLTHIOPHOSPHATE (I) (70-75PERCENT) AND O,O,DIMETHYL,O,
  6,NITRO,3,METHYLPHENYLTHIOPHOSPHATE (II) (25-30PERCENT), AND ITS BIOL.
  ACTIVITY. ISOMER I IS THE ACTIVE SUBSTANCE, AND II ACTED
  SYNERGISTICALLY. FORMULAE ARE GIVEN PERMITTING CALCN. OF THE CONTENT OF
  PARTICULAR ISOMERS WITH AN ACCURACY OF SIMILAR TO 2.5PERCENT.

UNCLASSIFIED

USSR

UDC 632.95

MANDEL'BAUM, YA. A., NIKISHOVA, G. YE., ZAKS, P. G.

"Phthalophos"

V sb. Khim. sredstva zashchity rast. (Chemical Means of Plant Protection --- collection of works), vyp. 1, Moscow, 1970, pp 5-8 (from RZh-Khimiya, No 12, Jun 72, Abstract No 12N427)

Translation: The physical and chemical properties of phthalophos (I), the toxicity, the method of analysis and means of obtaining I and chloromethyl-phthalimide are described.

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USSR

UDC 632.95

MANDEL'BAUM, YA. A., LOMAKINA, V. I., MEL'NIKOV, N. N.

"Derivatives of Phosphoric and Dithiocarbamic Acids"

V sb. Khim. sredstva zashchity rast. (Chemical Means of Plant Protection --
collection of works), vyp. 1, Moscow, 1970, pp 104-110 (from RZh-Khimiya, No
12, Jun 72, Abstract No 12N426)

Translation: In order to study their pesticidal activity, derivatives of phos-
phoric and dithiocarbamic acids were synthesized with the general formulas
$(RO)(R')(X)SCH_2CH_2SC(S)NR_2''$ (I), $(RO)_2P(S)SCH_2COSC(S)NR_2''$ (II) and $R_2NC(S)CH_2-$
CH_2R''' (III) (everywhere, R = alkyl, R' = alkoxyl or aryl, R'' = C_2-C_5-alkyl,
R''' = aryloxy or the arylmercapto group X = 0 or S). A solution of 0.025
moles of $ClCH_2CH_2SC(S)N$ (Pr-iso)$_2$ in 50 ml of ethanol is added to a solution
of 0.025 moles of $(BuO)_2P(S)SK$ in 50 ml of absolute ethanol at 20° and with
mixing. The mixture is heated for 5 hours at 50-65° and filtered, separating
I (R = Bu, R' = BuO, R'' = iso-Pr, X = S), $C_{17}H_{36}NO_2PS_4$ from the mother liquor;
the yield is 60.7% with a melting point of 46-9° (ethanol). The I is obtained

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MANDEL'BAUM, YA. A., et al., Khim. sredstva zashchity rast., vyp. 1, Moscow, 1970, pp 104-110

analogously (the R, R', R'', X and the molecular formula are recalculated, the yield in %, $n^{20}D$, d_4^{20}): Et, EtO, Pr, S, $C_{13}H_{28}NO_2PS_4$, 70.6, 1.5726, 1.639; Pr, PrO, Pr, S, $C_{15}H_{36}NO_2PS_4$, 73, 1.5512, 1.1186; Pr, PrO, iso-C_5H_{11}, S, $C_{19}H_{40}NO_2PS_4$, 84, 1.5343, 1.0882; Bu, BuO, iso-C_5H_{11}, S', $C_{21}H_{44}NO_2PS_4$, 74, 1.5312, 1.0704; Et, Ph, Pr, O, $C_{17}H_{28}NO_2PS_2$, 19, 1.5619, 1.1620. The I are also obtained by the interaction of equimolecular amounts of $R_2''NC(S)SM$ (M is an alkali metal) with $(RO)(R')P(X)SCH_2CH_2Cl$. In particular, I are synthesized by the indicated method (R, R', R'', X and the molecular formula, the yield in %, $n^{20}D$ and d_4^{20} are given): Et, EtO, Et, S, $C_{11}H_{24}NO_2PS_4$, 41.6, 1.5509, 1.1643; Pr, PrO, Et, S, $C_{13}H_{28}NO_2PS_4$, 50, 1.5495, 1.1416; Bu, BuO, Et, O, $C_{15}H_{32}NO_3PS_3$, 56.2, 1.5294, 1.1176. A solution of 0.02 moles of $ClCH_2C(O)SC(S)NR_2''$ in 10-20 ml of methyl ethyl ketone is added to the suspension of 0.02 moles of $(PrO)_2$ PSSK in 80-90 ml of methyl elthyl ketone at 20-22°; the mixture is mixed for 12 hours at 50-75°, isolating II (R = R'' = Pr), $C_{15}H_{30}NO_3PS_4$, yield 41.2% $n^{20}D$

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MANDEL'BAUM, YA. A., et al., Khim. sredstva zashchity rast., vyp. 1, Moscow, 1970, pp 104-110

1.5091, d_4^{20} 1.0589. The II is obtained analogously (R, R'', the molecular formula, the yield in %, $n^{20}D$, d_4^{20} are given): Et, Pr, $C_{13}H_{26}NO_3PS_4$, 25, 1.5218, 1.1496; Pr, Et, $C_{13}H_{26}NO_3PS_4$, 58.7, 1.5419, 1.2104; Bu, Et, $C_{15}H_{30}NO_3PS_4$, 54.6, 1.5366, 1.1917; Bu, Pr, $C_{17}H_{34}NO_3PS_4$, 53, ―, ―, melting point 42-6°. A solution of 0.025 moles of $R_3NC(S)SCH_2CH_2Cl$ in 10-15 ml of C_6H_6 is added to a suspension of PhONa (obtained from 0.025 moles of PhOH and 0.025 metallic Na at 20°) in 75 ml of C_6H_6. The mixture is heated for 6 hours at 70-75°, isolating III (R = Pr, R''' = PhO), $C_{15}H_{23}NOS_2$, yield 82%, $n^{20}D$ 1.5581, d_4^{20} 1.0733. The I are obtained analogously (R, R''', the molecular formula, the yield in %, $n^{20}D$, d_4^{20} are given): Et, PhO, $C_{13}H_{19}NOS_2$, 40.3, 1.5828, 1.1282; Et, $4-ClC_6H_4O$, $C_{13}H_{18}ClNOS_2$, 63, 1.5889, 1.2047; Et, $2,4-Cl_2C_6H_3O$, $C_{13}H_{17}Cl_2NOS_2$, 71, 1.5932, 1.2352; Et, PhS, $C_{13}H_{19}NS_3$, 60, 1.6120, 1.1385; Et,

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MANDEL'BAUM, YA. A., et al., Khim. sredstva zashchity rast., vyp. 1, Moscow, 1970, pp 104-110

4-ClC$_6$H$_4$S, C$_{13}$H$_{18}$ClNS$_3$, 67.5, 1.6361, 1.2493; Pr, 4-ClC$_6$H$_4$O, C$_{15}$H$_{22}$ClNOS$_2$, 76, 1.5730, 1.1728; Pr, 2,4-Cl$_2$C$_6$H$_3$O, C$_{15}$H$_{21}$Cl$_2$NOS$_2$, 62, 1.5732, 1.878; Pr, PhS, C$_{15}$H$_{23}$NS$_3$, 61, 1.5955, 1.1086; Pr, 4-ClC$_6$H$_4$S, C$_{15}$H$_{22}$ClNS$_3$, 50, 1.6120, 1.916. The I-III do not have insecticide activity. Weak herbicidal and significant fungicidal properties were exhibited.

USSR   UDC 632.95

ITSKOVA, A. L., GAR, K. A., MANDEL'BAUM, YA. A., FETISOVA, V. F., and ORLOVA, V. I.

"An Arcaricide"

USSR Authors' Certificate No 267244, Cl. A 01 n 9/36; A 01 n 9/14, filed 16 Sep 68, published 17 Jan 72 (from RZh-Khimiya, No 14, 25 Jul 72, Abstract No 14N468 by T. A. Belyayeva)

Translation: For the control of spider mites the authors suggest application of a thiophosphate with the general formula $(RO)(R'R''N)P(O)SCH_2CON(Et)SO_2Me$ (I) (R = Me or Et; R' = Me, Et, Pr; R'' = H, Me, Et). Results of I tests on spider mite specimens are presented.

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USSR

VLADIMIROVA, I. L., GRAPOV, A. F., MANDEL'BAUM, YA. A., and MEL'NIKOV, N. N.

"Fungicidal Mixed Ester-amides and Diamides of Thio- and Dithiophosphoric and Phosphonic Acids"

Translation: The authors synthesized ester-amides of thiophosphoric acid amides and hydrazides of O-alkyl-S-aryldithiophosphoric acid, ester-amides of methyl-, chloromethyl- and trichloromethylphosphonic acids, O-alkyl N, N'-diaryldiamidothiophosphates, O-alkyl N-alkyl-N'-aryldiamidothiophosphates, amides of thiophosphonic acids, dithiocyclodiphosphatanes, and diamides of methylphosphonic acid, in order to study their fungicidal activity. Ester-amides of methylphosphonic acid, although containing groups capable of partici-pating in redox processes, suppress the growth of fungal organisms weakly. Derivatives of thiophosphoric and thiophosphonic acids showed significant fungi-cidal activity. S-Aryl amidodithiophosphates possess the highest fungicidal activity. The fungicidal activity of the preparations usually rises with an increase of the radical at the nitrogen from C_1 to C_4.

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USSR

UDC 621.791.756:669.15-194

MANDEL'BERG, S. L., RYBAKOV, A. A., and DENISENKO, A. V., Institute of
Electric Welding imeni Ye. O. Paton of the Academy of Sciences, UkrSSR

"The Effect of Titanium on Properties of Welded Joints of Silicomanganic
Steel"

Kiev, Avtomaticheskaya, Svarka, No 7, Jul 72, pp 9-12

Abstract: An investigation was made of the effect of up to 0.23% Ti additions
on the mechanical properties of welded joints of silicomanganic steel con-
taining 0,14-0.17% C, 1.08-1.27% Mn, 0.51-0.82% Si, and 0.029-0.086% Al.
Specimens 11 mm thick and double-seam flux welded with Sv-08GA electrode
were investigated. The welding of silicomanganic steel with > 0.15% Ti
additions was found to lead to joint embrittlement. A decrease of Ti additions
to 0.13% tends to increase the impact ductility of individual parts of
welded joints. Recommendations are given for welding silicomanganic steel
with increased Ti content (> 0.13%) and for increasing impact ductility of
the seam metal and the metal of the near-seam zone of silicomanganic steel
additionally alloyed with > 0.15% Ti. Five illustrations, nine
bibliographic references.

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USSR   UDC: 621.396.679.4(088.8)

MANDEL'SHTAM, M. Ya. and STARIK, A. M.

"Coaxial Resonance Discharger for Receiver Protection"

Avt. sv. SSSR (Author's Certificate USSR) Class 21a^4, 73, (H 01 p
1/14), No. 272405, Application 10.01.64, Publication 22.09.70
(from Rzh-Radiotekhnika, No. 3, March 71, Abstract No. 3B93P)

Translation: The proposed discharger contains hermetically sealed
coaxial sections. For the purpose of broadening the operating
frequency band, resonance diaphragms formed by hollow metal tubes
which connect the inner and outer conductors of the coaxial line,
and metal rods, one end of which is connected to the outer con-
ductor, are inserted into the coaxial section.

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USSR   UDC: 621.372.831.4-762(088.8)

MANDEL'SHTAM, N. Ya.

"A Resonance Window for Coaxial Dischargers"

USSR Author's Certificate No 273307, filed 15 Jun 64, published 2 Nov 70
(from RZh-Radiotekhnika, No 6, Jun 71, Abstract No 6B192 P)

Translation: The proposed resonance window for coaxial dischargers is
accommodated in a section of coaxial line. To reduce breakdown voltage,
the device is made in the form of two metal sectors located in the plane
of the coax cross section. One of the metal sectors is connected to the
inner conductor of the coaxial line and is separated from the outer con-
ductor by a narrow gap, and the other metal sector is connected to the
inner and outer conductors of the coaxial line.

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USSR

UDC: 621.396.679.4(088.8)

MANDEL'SHTAM, N. M.

"Narrow-Band Coaxial Discharger"

Avt. sv. SSSR (Author's Certificate USSR) Class 21a[4], 73, (H Olp 1/14), No. 273306, Application 26.12.64, Publication 14.09.70 (from Rzh-Radiotekhnika, No. 3, March 71, Abstract No. 3B94P)

Translation: The proposed discharger consists of a section of coaxial line bounded on two sides by inductive rods. Two capacitors are connected in parallel to the resonator, with electrodes in the form of conic tips on the plates of one of them.

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USSR   UDC 621.643.001.5

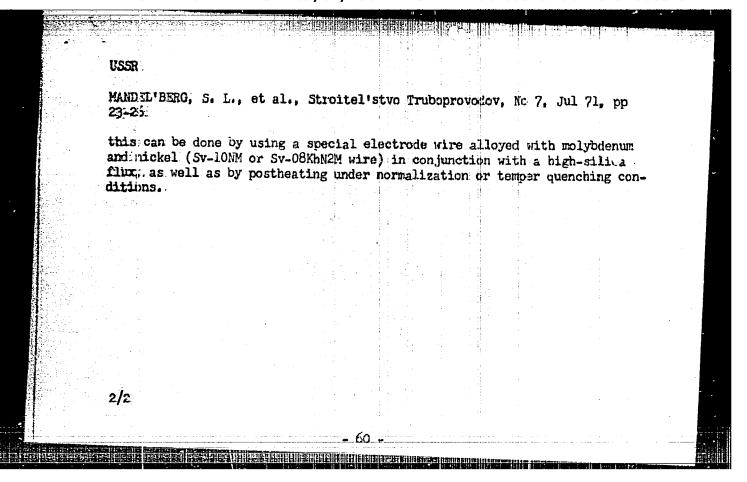MANDEL'BERG, S. L., SEMENOV, S. YE., and BOGACHEK, YU. L., Institute of Electric Welding imeni Ye. O. Paton, Kiev

"Increasing the Impact Strength of Gas Pipe Weld Metal"

Abstract: The article describes work performed at the Institute of Electric Welding imeni Ye. O. Paton to estimate the impact strength level of the weld metal of gas pipes and to determine ways of increasing it. Tests of expanded 17G1S steel pipes showed that the impact strength of the welds at -40° C was considerably less than for hot-straightened or thermally strengthened pipes. Low impact strength values are observed at -40 and -60° C right after welding. Expansion causes cold deformation of the metal, which produces an additional reduction in the impact strength of the welds. To increase the impact strength of the metal of the deformed welds, a more homogeneous structure with refined grains must be obtained. For expanded 17G1S steel pipes

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USSR

MANDEL'BERG, S. L., et al., Stroitel'stvo Truboprovodov, No 7, Jul 71, pp 23-25.

this can be done by using a special electrode wire alloyed with molybdenum and nickel (Sv-10NM or Sv-08KhN2M wire) in conjunction with a high-silica flux, as well as by postheating under normalization or temper quenching conditions.

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USSR   UDC: 621.372.85(088.8)

MANDEL'SHTAM, M. Ya., STARIK, A. M.

"A Coaxial Discharger for Blocking a Transmitter"

USSR Author's Certificate No 273305, filed 12 Dec 64, published 14 Sep 70
(from RZh-Radiotekhnika, No 2, Feb 71, Abstract No 2B221 P)

Translation: This Author's Certificate introduces a coaxial discharger for
transmitter blocking made in the form of a tee with a resonant window con-
nected in the side branch. In order to tune the discharger to a predeter-
mined frequency, a coaxial loop of controllable length open at the end is
connected to the face in which the resonant window is located. This loop
is formed by a continuation of the outer conductor of the coax and a metal
rod of variable length connected to the central section of the resonant
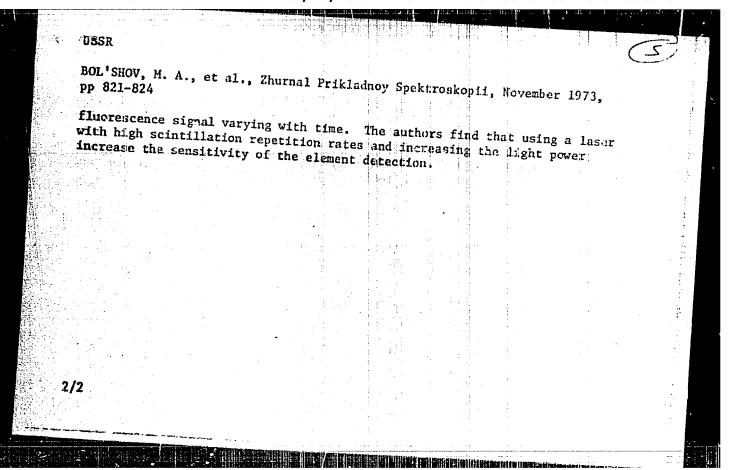window.

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(5)

USSR

UDC 535.37:621.375.8

BOL'SHOV, M. A., GUZEYEV, I. D., ZYBIN, A. V., KOLOSHNIKOV, V. G., MAYOROV, I. A., NEDLER, V. V., MANDEL'SHTAM, S. L., TIMOFEYEV, Ye. F., and FILIMINOV, L. N.
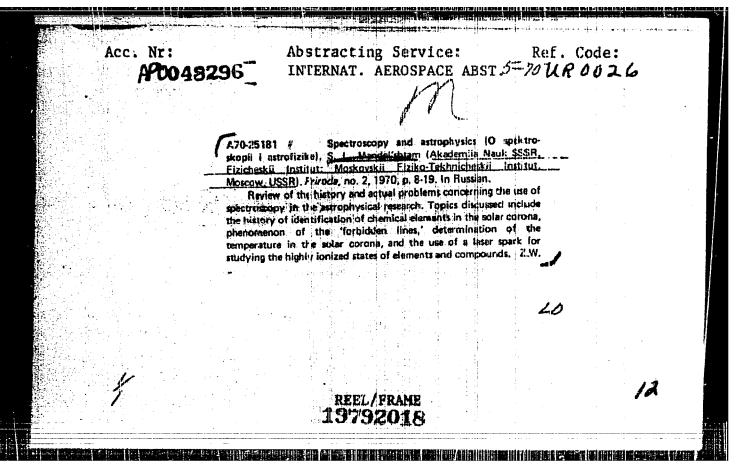
"Determining Small Na Concentrations by the Fluorescence Resonance Method Using Tunable, Pulsed Dye Lasers"

Minsk, Zhurnal Prikladnoy Spektroskopii, November 1973, pp 821-824

Abstract: The subject of this article involves the method of fluorescence resonance in the use of tunable radiation dye lasers for detecting small concentrations of elements. Experiments designed to demonstrate the possibilities of this method in the saturation mode of resonance transition with Na as the element to be detected are described. For the excitation of the Na vapor a rhodamine laser of the 62h type, pumped by the second harmonic radiation of a neodymium laser, was employed. The duration of the pulses was $2 \cdot 10^{-8}$ sec, their power was 10^5 W, the width of the fluorescence line was 1 Å, and the tunable range 5600-6200 Å, with an interval of 20-30 sec between scintillations. The 2MR-3 was used as receiver. A block diagram of the equipment is given, together with a curve for the amplitude of the 1/2

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BOL'SHOV, M. A., et al., Zhurnal Prikladnoy Spektroskopii, November 1973, pp 821-824

fluorescence signal varying with time. The authors find that using a laser with high scintillation repetition rates and increasing the light power increase the sensitivity of the element detection.

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A70-25181 #   Spectroscopy and astrophysics (O spektro-
skopii i astrofizike), S. L. Mandel'shtam (Akademiia Nauk SSSR,
Fizicheskii Institut; Moskovskii Fiziko-Tekhnicheskii Institut,
Moscow, USSR). Priroda, no. 2, 1970, p. 8-19. In Russian.

Review of the history and actual problems concerning the use of
spectroscopy in the astrophysical research. Topics discussed include
the history of identification of chemical elements in the solar corona,
phenomenon of the 'forbidden lines,' determination of the
temperature in the solar corona, and the use of a laser spark for
studying the highly ionized states of elements and compounds.   Z.W.

REEL/FRAME
19792018

UNCLASSIFIED

TITLE--THE PHYSICS OF ELECTRONIC AND ATOMIC COLLISIONS -U-

PROCESSING DATE--27NOV70

AUTHOR-(02)-DAMBURG, R.YA., KRAULINYA, E.K.

COUNTRY OF INFO--USSR

SOURCE--MOSCOW, VESTNIK AKADEMII NAUK SSSR, RUSSIAN, VOL 40, NO 1, JANUARY
1970, PP 112-113

DATE PUBLISHED-------70

SUBJECT AREAS--BEHAVIORAL AND SOCIAL SCIENCES, PHYSICS

TOPIC TAGS--CONFERENCE, ELECTRON COLLISION, ATOM, SOLID STATE, DISCHARGE
PLASMA, IONIZATION, DISSOCIATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3006/1652

STEP NO--UR/0030/70/040/001/0112/0113

CIRC ACCESSION NO--AT0135267

UNCLASSIFIED

WITH A. Z. DOLGINOV A REPORT ENTITLED "THE OBSERVATION OF COMETS AS A
SOURCE OF INFORMATION ABOUT ELEMENTARY PROCESSES UNDER COLLISIONLESS
CONDITIONS". ALL THE SURVEY REPORTS AROUSED MUCH INTEREST AND ACTIVE
DISCUSSION. A VERY LARGE NUMBER OF REPORTS DEALT WITH EXPERIMENTAL
INVESTIGATIONS OF ATOM-ATOM COLLISIONS.

UNCLASSIFIED

2/4   030   UNCLASSIFIED   PROCESSING DATE--27NOV70
CIRC ACCESSION NO--AT0135267
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE FOURTH ALL UNION CONFERENCE ON
THE PHYSICS OF ELECTRONIC AND ATOMIC COLLISIONS WAS HELD ON 15-20

574   030
CIRC ACCESSION NO--AT0135267   UNCLASSIFIED   PROCESSING DATE--27NOV7C
ABSTRACT/EXTRACT--TRANSFER OF EXCITATION BETWEEN HELIUM ATOMS WAS STUDIED
UNDER CONDITIONS OF DISCHARGE PLASMA (LENINGRAD AND CHUBASH UNIVERSITIES
AND THE CENTRAL SCIENTIFIC RESEARCH INSTITUTE OF PHYSICS OF THE
HUNGARIAN ACADEMY OF SCIENCES), BETWEEN HYDROGEN ATOMS (PHYSICOTECHNICAL
INSTITUTE IMENI A. F. IOFFE OF THE AS USSR) AND FROM EXCITED HYDROGEN
ATOMS TO ARGON ANOMS (INSTITUTE IMENI R. BOSHKOVICH, YUGOSLAVIA),
MEASUREMENTS WERE MADE OF THE MEAN LIFE OF METASTABLE HELIUM ATOMS,
PROCESSES IN XENON WERE INVESTIGATED, ETC.   IN A LARGE NUMBER OF
REPORTS THERE WERE DISCUSSIONS OF QUESTIONS RELATING TO EXPERIMENTAL
STUDY OF REACTIONS OF IONIZATION, DISSOCIATION AND RECHARGING, AND ALSO
TO ION MOLECULAR REACTIONS (PHYSICOTECHNICAL INSTITUTE OF THE AS USSR,
PHYSICOTECHNICAL INSTITUTE OF THE AS UKRAINIAN SSR, PHYSICOCHEMICAL
INSTITUTE IMENI L. YA. KARPOV, THE INSTITUTE OF NUCLEAR PHYSICS OF THE
SIBERIAN DEPARTMENT OF THE AS USSR, THE JOINT NUCLEAR RESEARCH
INSTITUTE, THE UNIVERSITIES OF UZHGORODSK AND L'VOV, AND THE INSTITUTE
IMENI B. KIDRICH IN YUGOSLAVIA).   CONSIDERABLE INTEREST HAS AROUSED BY
A SESSION DEVOTED TO INELASTIC LOSSES IN ATOMIC COLLISIONS AND
AUTOIONIZATION STATES.   HERE REPORTS WERE PRESENTED ON THE INVESTIGATION
OF THE SPECTRA OF INELASTIC LOSSES DURING SINGLE COLLISIONS OF AR PRIME
POSITIVE WITH AR, NE PRIME POSITIVE WITH NE, OF NE PRIME POSITIVE IONS,
OF H PRIME POSITIVE AND NE PRIME POSITIVE WITH AR ATOMS, OF H PRIME
POSITIVE IONS, AND OF D PRIME POSITIVE WITH ATOMS OF INERT GASES
(PHYSICOTECHNICAL INSTITUTE OF THE AS USSR).

UNCLASSIFIED

CIRC ACCESSION NO--AT0135267
ABSTRACT/EXTRACT--IN A NUMBER OF REPORTS OF CO WORKERS OF THE SAME
  INSTITUTE WERE RESULTS OF INVESTIGATIONS OF THE ENERGY SPECTRA OF
  ELECTRONS LIBERATED DURING COLLISIONS OF POSITIVE AND NEGATIVE IONS WITH
  ATOMS. THAT METHOD PROVED TO BE SUCCESSFUL IN STUDYING AUTOIONIZATION
  STATES OF AR, NE, NA, K, RB AND CS ATOMS.   LONG LIVED AUTOIONIZATION
  STATES OF AR, KR, AND XE ATOMS AND THE AR PRIME POSITIVE ION WERE
  DETECTED BY MEANS OF MASS SPECTROMETRY (PHYSICOCHEMICAL INSTITUTE IMENI
  L. YA. KARBOV). METHODS OF FORMATION OF LONG LIVED AUTOIONIZATION
  STATES OF LITHIUM LIKE AND METASTABLE HELIUM LIKE PARTICLES WERE
  INVESTIGATED (MOSCOW UNIVERSITY).

USSR

UDC 53.083

ZHUKOVSKIY, YE. YE., and MANDEL'SHTAM, S. M., Candidates of Technical
Sciences

"Errors of Linear Interpolation During Discrete Measurements of a Random Process
by an Inertial Instrument"

Moscow, Pribory i Sistemy Upravleniya, No 5, May 1973, pp 36-38

Abstract: General formulas are obtained for calculating the current and mean
error dispersion of the linear interpolation of a steady random process on the
basis of discrete readings of an inertial instrument. These relationships are
given specific form in application to the problem of the linear interpolation
of a steady process with an exponential autocorrelation function. It is shown
that with a known discretization interval of an exponentially correlatied pro-
cess, such a lag of the measuring instrument can be found, at which the mean
dispersion of the error of linear interpolation is minimal. At small intervals
of the discretization of an exponentially correlated process, use of the read-
ings of the less inertial of any two comparable instruments permits a higher
accuracy of linear interpolation to be obtained: at discretization intervals
which exceed a critical value, higher accuracy of linear interpolation is at-
tained with the use of measurements obtained by means of the more inertial of
two comparable instruments. 3 figures.

USSR

VAVILOV, V. S., GUZEYeV, N. V., ZAYaTs, V. A., KONONENKO, V. L., MANDEL'ShTAM, T. S., and MURZIN, V. N.

"The Spectra of Photo Excitation of Free Excitons by Submillimeter Radiation in 'Ultra Pure' Germanium"

Moscow, Pis'ma v Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, Vol 17, No 9, 5 May 73, pp 480 - 483

Abstract: Recent experiments have been successful in the study of characteristics of excitons in the long-wave infrared band. Absorption in the region of 2 - 5 Mev was observed in 1971. Subsequent experiments with a backwards wave tube recorded absorption by free excitons in germanium of a triplet with a maximum at 3.42 Mev. In both cases the germanium had residual impurities of $10^{12} - 10^{13} cm^{-3}$, which does not completely exclude possible impurity effects. The authors have made tests at impurity levels no greater than $5 \cdot 10^{10} cm^{-3}$ with a backward wave tube at 340 - 455 and 510 - 730 micrometers, as well as with a diffraction spectrometer at the far infrared region of 60 - 700 micrometers. The experiments were at 1.5 - 4.2 degrees K.
1/1

USSR

VAVILOV, V. S., et al., Moscow, Pis'ma v Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, Vol 17, No 9, 5 May 73, pp 480 - 483

Results indicate that the binding energy of the exciton in the ground state is 3.7 Mev and that the distance between the lowest two states is 0.7 Mev, a result which agrees fairly well with theoretical predictions and with measurements in the interzonal transition region. The narrowness of the absorption lines measured ..indicates that kinetic energy of the excitons does not substantially contribute to broadening these lines. The broadness is apparently related to interactions between the excitons and null oscillations of the crystal lattice.

1/2

1/2   016
TITLE--CARBENE CHEMISTRY -U-   UNCLASSIFIED   PROCESSING DATE--27NOV70

AUTHOR-(05)-DANILKINA, L.P., KOMENDANTOV, M.I., KOSTIKOV, R.R.,
   MANDELSHTAM, T.V., RAZIN, V.V.
COUNTRY OF INFO--USSR

SOURCE--VESTN. LENINGRAD. UNIV., FIZ., KHIM. 1970, (1), 123-43

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--CHEMICAL BONDING, MOLECULAR STRUCTURE, CHEMICAL REACTION
   MECHANISM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3008/1736

STEP NO--UR/0054/70/000/001/0123/0143

CIRC ACCESSION NO--AP0138709
                    UNCLASSIFIED

272   016   UNCLASSIFIED   PROCESSING DATE--27NOV70
CIRC ACCESSION NO--AP0133709
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A REVIEW OF THE STRUCTURE,
REACTIVITY, AND REACTION MECHANISMS OF CARBENES WITH COMPDS. CONTG.
MULTIPLE BONDS, WITH SPECIAL REF. TO THE WORK OF E. R. DYAKONOV WITH 150
REFS.

UNCLASSIFIED

TITLE--THE PHYSICS OF ELECTRONIC AND ATOMIC COLLISIONS -U-

AUTHOR-(02)-DAMBURG, R.YA., KRAULINYA, E.K.

COUNTRY OF INFO--USSR

SOURCE--MOSCOW, VESTNIK AKADEMII NAUK SSSR, RUSSIAN, VOL 40, NO 1, JANUARY
   1970, PP 112-113
DATE PUBLISHED-------70

SUBJECT AREAS--BEHAVIORAL AND SOCIAL SCIENCES, PHYSICS

TOPIC TAGS--CONFERENCE, ELECTRON COLLISION, ATOM, SOLID STATE, DISCHARGE
   PLASMA, IONIZATION, DISSOCIATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3006/1652   STEP NO--UR/0030/70/040/001/0112/0113

CIRC ACCESSION NO--AT0135267
                          UNCLASSIFIED

274   030
CIRC ACCESSION NO--AT0135267   UNCLASSIFIED
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE FOURTH ALL UNION CONFERENCE ON
THE PHYSICS OF ELECTRONIC AND ATOMIC COLLISIONS WAS HELD ON 15-20
SEPTEMBER 1969 IN RIGA. THE INSTITUTE OF PHYSICS OF THE AS LATVIAN SSR
AND THE UNIVERSITY OF LATVIA TOOK UPON THEMSELVES THE ORGANIZATION OF
THE MEETING. PARTICIPATING IN THE WORK WERE ABOUT 350 REPRESENTATIVES
OF ACADEMIC AND BRANCH INSTITUTES AND VUZES OF THE COUNTRY AND ALSO
GUESTS FROM BULGARIA, HUNGARY, EAST GERMANY AND YUGOSLAVIA. ONE HUNDRED
AND EIGHTY REPORTS WERE READ AT THE PLENARY AND SECTIONAL SESSIONS. TO
STRENGTHEN AND EXPAND CONTACTS WITH THOSE RELATED AREAS, FOR THE FIRST
TIME AT THE CONFERENCE SURVEY REPORTS WERE MADE ON ATOMIC COLLISIONS IN
THE SOLID STATE (O. B. FIRSOV, V. A. MOLCHANOV AND E. S. PARILIS), ON
MULTIPHOTON IONIZATION (N. B. DELONE AND L. V. KELDYSH), ON THE CREATION
AND DESTRUCTION OF COHERENT STATES BY COLLISIONS (U. KH. KOPVILLEM), AND
ON CHEMICAL ACCELERATORS (B. V. LEONAS). YU. N. GNEDIN READ JOINTLY
WITH A. Z. DOLGINOV A REPORT ENTITLED "THE OBSERVATION OF COMETS AS A
SOURCE OF INFORMATION ABOUT ELEMENTARY PROCESSES UNDER COLLISIONLESS
CONDITIONS". ALL THE SURVEY REPORTS AROUSED MUCH INTEREST AND ACTIVE
DISCUSSION. A VERY LARGE NUMBER OF REPORTS DEALT WITH EXPERIMENTAL
INVESTIGATIONS OF ATOM-ATOM COLLISIONS.

UNCLASSIFIED

CIRC ACCESSION NO--AT0135267
ABSTRACT/EXTRACT--TRANSFER OF EXCITATION BETWEEN HELIUM ATOMS WAS STUDIED
  UNDER CONDITIONS OF DISCHARGE PLASMA (LENINGRAD AND CHUBASH UNIVERSITIES
  AND THE CENTRAL SCIENTIFIC RESEARCH INSTITUTE OF PHYSICS OF THE
  HUNGARIAN ACADEMY OF SCIENCES), BETWEEN HYDROGEN ATOMS (PHYSICOTECHNICAL
  INSTITUTE IMENI A. F. IOFFE OF THE AS USSR) AND FROM EXCITED HYDROGEN
  ATOMS TO ARGON ANOMS (INSTITUTE IMENI R. BOSHKOVICH, YUGOSLAVIA),
  MEASUREMENTS WERE MADE OF THE MEAN LIFE OF METASTABLE HELIUM ATOMS,
  PROCESSES IN XENON WERE INVESTIGATED, ETC.   IN A LARGE NUMBER OF
  REPORTS THERE WERE DISCUSSIONS OF QUESTIONS RELATING TO EXPERIMENTAL
  STUDY OF REACTIONS OF IONIZATION, DISSOCIATION AND RECHARGING, AND ALSO
  TO ION MOLECULAR REACTIONS (PHYSICOTECHNICAL INSTITUTE OF THE AS USSR,
  PHYSICOTECHNICAL INSTITUTE OF THE AS UKRAINIAN SSR, PHYSICOCHEMICAL
  INSTITUTE IMENI L. YA. KARPOV, THE INSTITUTE OF NUCLEAR PHYSICS OF THE
  SIBERIAN DEPARTMENT OF THE AS USSR, THE JOINT NUCLEAR RESEARCH
  INSTITUTE, THE UNIVERSITIES OF UZHGORODSK AND L'VOV, AND THE INSTITUTE
  IMENI B. KIDRICH IN YUGOSLAVIA).   CONSIDERABLE INTEREST WAS AROUSED BY
  A SESSION DEVOTED TO INELASTIC LOSSES IN ATOMIC COLLISIONS AND
  AUTOIONIZATION STATES.   HERE REPORTS WERE PRESENTED ON THE INVESTIGATION
  OF THE SPECTRA OF INELASTIC LOSSES DURING SINGLE COLLISIONS OF AR PRIME
  POSITIVE WITH AR, NE PRIME POSITIVE WITH NE, OF NE PRIME POSITIVE IONS,
  OF N PRIME POSITIVE AND NE PRIME POSITIVE WITH AR ATOMS, OF H PRIME
  POSITIVE IONS, AND OF O PRIME POSITIVE WITH ATOMS OF INERT GASES
  (PHYSICOTECHNICAL INSTITUTE OF THE AS USSR).

                          UNCLASSIFIED

CIRC ACCESSION NO--AT0135267
ABSTRACT/EXTRACT--IN A NUMBER OF REPORTS OF CO WORKERS OF THE SAME
  INSTITUTE WERE RESULTS OF INVESTIGATIONS OF THE ENERGY SPECTRA OF
  ELECTRONS LIBERATED DURING COLLISIONS OF POSITIVE AND NEGATIVE IONS WITH
  ATOMS. THAT METHOD PROVED TO BE SUCCESSFUL IN STUDYING AUTOIONIZATION
  STATES OF AR, NE, NA, K, RB AND CS ATOMS.   LONG LIVED AUTOIONIZATION
  STATES OF AR, KR, AND XE ATOMS AND THE AR PRIME POSITIVE ION WERE
  DETECTED BY MEANS OF MASS SPECTROMETRY (PHYSICOCHEMICAL INSTITUTE IMENI
  L. YA. KARBOV). METHODS OF FORMATION OF LONG LIVED AUTOIONIZATION
  STATES OF LITHIUM LIKE AND METASTABLE HELIUM LIKE PARTICLES WERE
  INVESTIGATED (MOSCOW UNIVERSITY).

UNCLASSIFIED

USSR   UDC 53.083

ZHUKOVSKIY, YE. YE., and MANDEL'SHTAM, S. M., Candidates of Technical
Sciences
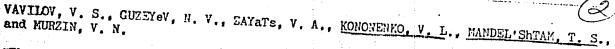
"Errors of Linear Interpolation During Discrete Measurements of a Random Process
by an Inertial Instrument"

Moscow, Pribory i Sistemy Upravleniya, No 5, May 1973, pp 36-38

Abstract: General formulas are obtained for calculating the current and mean
error dispersion of the linear interpolation of a steady random process on the
basis of discrete readings of an inertial instrument. These relationships are
given specific form in application to the problem of the linear interpolation
of a steady process with an exponential autocorrelation function. It is shown
that with a known discretization interval of an exponentially correlated pro-
cess, such a lag of the measuring instrument can be found, at which the mean
dispersion of the error of linear interpolation is minimal. At small intervals
of the discretization of an exponentially correlated process, use of the read-
ings of the less inertial of any two comparable instruments permits a higher
accuracy of linear interpolation to be obtained; at discretization intervals
which exceed a critical value, higher accuracy of linear interpolation is at-
tained with the use of measurements obtained by means of the more inertial of
two comparable instruments. 3 figures.
1/1

USSR

VAVILOV, V. S., GUZEYeV, N. V., ZAYaTs, V. A., KONONENKO, V. L., MANDEL'ShTAM, T. S., and MURZIN, V. N.

"The Spectra of Photo Excitation of Free Excitons by Submillimeter Radiation in 'Ultra Pure' Germanium"

Abstract: Recent experiments have been successful in the study of characteristics of excitons in the long-wave infrared band. Absorption in the region of 2 - 5 Mev was observed in 1971. Subsequent experiments with a backwards wave tube recorded absorption by free excitons in germanium of a triplet with a maximum at 3.42 Mev. In both cases the germanium had residual impurities of $10^{12} - 10^{13}$cm^{-3}, which does not completely exclude possible impurity effects. The authors have made tests at impurity levels no greater than $5 \cdot 10^{10}$ cm^{-3} with a backward wave tube at 340 - 455 and 510 - 730 micrometers, as well as with a diffraction spectrometer at the far infrared region of 60 - 700 micrometers. The experiments were at 1.5 - 4.2 degrees K.

1/1

USSR

VAVILOV, V. S., et al., Moscow, Pis'ma v Zhurnal Eksperimental'noy i Teoreticheskoy
Fiziki, Vol 17, No 9, 5 May 73, pp 480 - 483

    Results indicate that the binding energy of the exciton in the ground state
is 3.7 Mev and that the distance between the lowest two states is 0.7 Mev,
a result which agrees fairly well with theoretical predictions and with measure-
ments in the interzonal transition region. The narrowness of the absorption lines
measured   indicates that kinetic energy of the excitons does not sub-
stantially contribute to broadening these lines. The broadness is apparently
related to interactions between the excitons and null oscillations of the crystal
lattice.

1/2

- 24-

UNCLASSIFIED   PROCESSING DATE--27NOV70

1/2   016

TITLE--CARBENE CHEMISTRY -U-

AUTHOR-(05)-DANILKINA, L.P., KOMENDANTOV, M.I., KOSTIKOV, R.R.,
MANDELSHTAM, T.V., RAZIN, V.V.

COUNTRY OF INFO--USSR

SOURCE--VESTN. LENINGRAD. UNIV., FIZ., KHIM. 1970, (1), 123-43

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--CHEMICAL BONDING, MOLECULAR STRUCTURE, CHEMICAL REACTION
MECHANISM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3008/1736   STEP NO--UR/0054/70/000/001/0123/0143

CIRC ACCESSION NO--AP0138709
                    UNCLASSIFIED

2/2   016
CIRC ACCESSION NO--AP0138709
ABSTRACT/EXTRACT--(U) GP-0-   ABSTRACT. A REVIEW OF THE STRUCTURE,
REACTIVITY, AND REACTION MECHANISMS OF CARBENES WITH COMPDS. CONTG.
MULTIPLE BONDS, WITH SPECIAL REF. TO THE WORK OF I. A. DYAKONOV WITH 160
REFS.
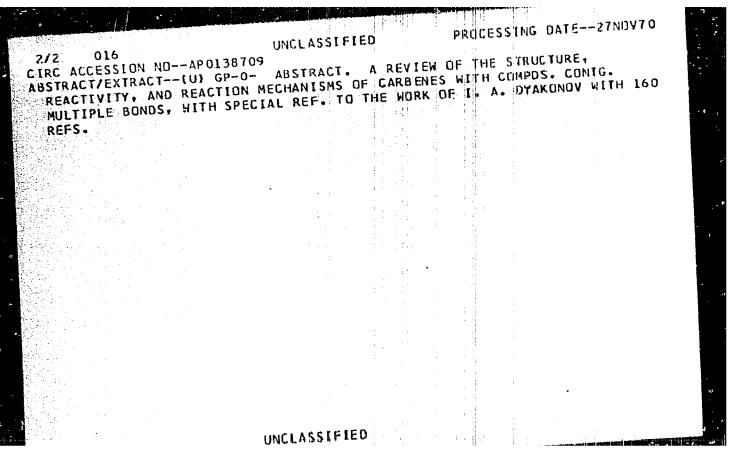
UNCLASSIFIED

USSR

KERBIKOV, B. O., MANDEL'TSVEYG, V. B., and SHAPIRO, I. S.

"Charge Variables for Describing Systems of Particles and Anti-Particles"

Abstract: It is shown that to set up the wave functions of systems consisting of nonrelativistic particles and anti-particles it is convenient to introduce charge variables. These make possible the evaluation of the G-parity of a system consisting of an even number of nucleons and anti-nucleons. It is shown that the G-parity of such a multiparticle system is not connected with the kinematic quantities of orbital moments, spins, and isospins but is an independent, exact quantum number defined only by the permutational symmetry of the wave function in terms of the charge variables. The authors express their gratitude to V. A. Karmanov, L. A. Kondratyuk, and M. S. Marinov for their comments.

1/1

USSR

DAL'KAROV, O. D., MANDEL'STVEYG, V. B., and SHAPIRO, I. S., Institute of Theoretical and Experimental Physics

"Possible Quasinuclear Nature of Heavy Meson Resonances"

Abstract: The article studies the possibility of the existence of nonrelativistic bound states in the $N\bar{N}$ system. The authors' starting point is the potential correctly describing low-energy $N\bar{N}$ scattering. The static variant of the Bryan-Phillips potential is used. It is shown that the potential interaction of nucleon and antinucleon at nonrelativistic energies leads to the existence of a number of nuclear-like bound states which manifest themselves as heavy mesonic reso- nances (with masses close to the double nucleon mass). The authors thank L. N. BOGDANOVA, YA. B. ZEL'DOVICH, A. P. SOKOLOV and K. A. TER-MARTIROSYAN for useful discussion, as well as N. YANIYEVA, A. V.

1/2

USSR

DAL'KAROV, O. D., et al., Zhurnal Eksperimental'noy i Teoreticheskoy
Fiziki, Vol 59, No 4, Oct 70, pp 1363-1367

2/2

USSR

DAL'KAROV, O. D., MANDEL'TSVEYG, V. B., and SHAPIRO, I. S. (Institute of Theoretical and Experimental Physics, State Committee for the Use of Atomic Energy)

"Generation Cross Sections of Quasinuclear Meson Resonances"

Moscow, Yadernaya Fizika, Vol 13, No 2, 1971, pp 332-335

Abstract: The differential production cross sections of heavy quasinuclear meson resonances corresponding to the stripping and capture mechanisms are calculated for the reactions: $\bar{p} + d \rightarrow N + X$ (I) and $d + p \rightarrow \bar{N} + X$ (II). The development of the differential cross sections as functions of applied momentum is found to depend essentially on the orbital moment relative to motion of N and $\bar{N}$, components of the quasinuclear meson. The full cross section $\sigma \doteq$ 1-200 microbarns. Evaluations are presented for the production cross section of quasinuclear mesons in substitution reactions. The differential and complete production cross sections of the four quasinuclear mesons are calculated, with kinetic energies of antiprotons of 0.4 and 10 KeV, in reaction (I). The corresponding cross sections in reaction (II) are found to be on the same order of magnitude.
1/1

1/2   015

TITLE--NONRELATIVISTIC BOUND STATES IN THE NUCLEON ANTINUCLEON SYSTEM -U-

UNCLASSIFIED

PROCESSING DATE--04DEC70

AUTHOR-(03)-DALKAROV, O.D., MANDELTSVEYG, V.B., SHAPIRO, I.S.

COUNTRY OF INFO--USSR

SOURCE--YAD. FIZ. 1970, 11(4), 889-95

DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--NUCLEON INTERACTION, ANTIPARTICLE, NUCLEAR ENERGY LEVEL, NUCLEAR RESONANCE, EXCITED STATE, EXCITATION ENERGY, NUCLEAR ISOBAR, MESON INTERACTION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3007/1079

CIRC ACCESSION NO--AP0136499

STEP NO--UR/0367/70/011/004/0889/0895

UNCLASSIFIED

CIRC ACCESSION NO--AP0136499   UNCLASSIFIED   PROCESSING DATE--04DEC70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IN THE MASS REGION 1580-1880 MEV,
7 MESON RESONANCES WITH THE APPROX. WIDTH OF 40-110 MEV AND A MEAN
DISTANCE OF LESS THAN OR EQUAL TO 40 MEV BETWEEN THEM WERE LOCATED
REPRESENTING THE QUASI NUCLEAR BOUND STATES OF THE N-BARN SYSTEM. THE
QUANTUM NOS. OF 4 OF THEM WERE DETD. TO BE 0 MINUS MINUS, 0 MINUS PLUS,
1 MINUS MINUS, AND 1 MINUS PLUS. THE PERIPHERAL INTERACTION OF AN BAR N
WITH 2N SHOULD LEAD TO THE EXISTENCE OF A SERIES OF BARYON RESONANCES AT
2500-800 MEV AND THE MULTINUCLEAR RESONANCES OF THE SAME TYPE SHOULD
RESULT AS THE EXCITED STATES ON NUCLEI WITH THE EXCITATION ENERGY OF
1.5-2 GEV. IN THIS WAY, THE LEVEL SPECTRUM OF NUCLEI EXTENDED TO THE
EXCITATION ENERGY OF SEVERAL GEV AND COULD BE CHARACTERIZED IN THIS
SERIES: THE ORDINARY NUCLEUS LEVELS WERE FOLLOWED BY LEVELS WITH THE
EXCITATION ENERGY OF SEVERAL HUNDREDS OF MEV CORRESPONDING TO THE
EXISTENCE OF NUCLEON ISOBARS AND AT SIMILAR TO 2 GEV THE ABOVE STUDIED
LEVELS STARTED.   FACILITY: INST. TEOR. EKSP. FIZ., MOSCOW, USSR.

UNCLASSIFIED

USSR

DOROSHENKO, A. V., MANDRICH, V. G., PETROV, V. Ye., RIRAKHOVSKIY, Yu. V., BALASHOV, L. L.

"A Very-Low-Frequency Sinusoidal Voltage Generator"

Translation: This Author's Certificate introduces a very-low-frequency sinusoidal voltage generator equipped with a master oscillator, a digital--analog converter, and a DC output amplifier. To simplify the circuit of the generator and improve its operational reliability, the digital--analog converter contains a stepped voltage shaper and a shaper for the beginning and end of linear sections. These shaper circuits are inter-connected by logic nets and a voltage divider and are connected to the DC output amplifier. Two illustrations.

1/1

- 11 -

USSR

MANDRIGINA, G. P.

"Application of Game Theory to Planning for Preventive Maintenance"

Riga, Avtomatika i Vychislitel'naya Tekhnika; July-August, 1971; pp 26-32

ABSTRACT: Several possibilities for the application of a game theory approach to problems in reliability theory are studied by the author. An analysis of the competence of such an approach is made and several advantages of using game theory in the solution of this problem are cited by way of illustration.

Two figures are given. Figure 1 shows two curves for the value of a game as a function of the cost of preventive maintenance: 1 - expenses with a mixed strategy; 2 - expenses with the "best" pure strategy. Figure 2 shows a diagram for the numerical solution of a problem.

There are three references.

1/1

USSR

2

MAYKO, I. I., KAGANS'KA, M. B., RASHBA, O. Ya., SHVAYGER, M. O., MANDRIK, T. P., and ZHEREBILO. O. S., Institute of Microbiology and Virology, Academy of Sciences Ukrainian SSR
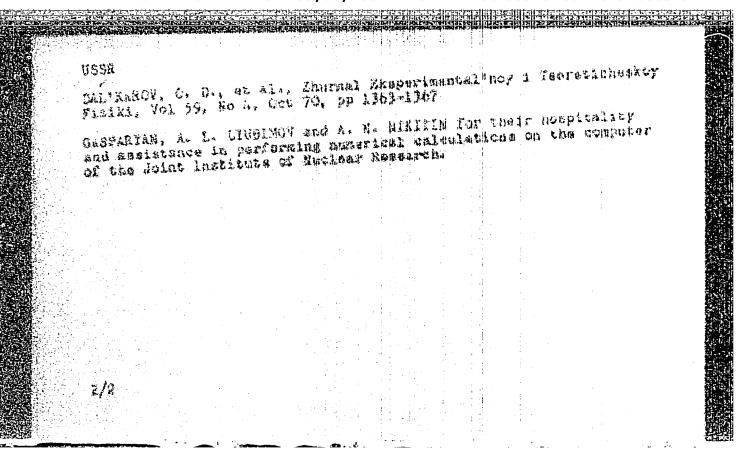
UDC 576.851.48.097:616-006.04

"Antitumor Activity of Polysaccharide-Containing Complexes of Escherichia coli"

Kiev, Mikrobiologicheskiy Zhurnal, Vol 33, No 5, Sep/Oct 71, pp 548-552

Abstract: The antitumor activity of polysaccharide-containing complexes derived from the alkali-forming mutant KM of E. coli was studied in experiments on mice infected with sarcoma 37, lymphadenoma NK/Ly, lymphoma LyO-1, Ehrlich's tumor, and sarcoma K-239. The following polysaccharide-containing complexes were used: Boivin's antigen; complex antigen prepared according to O. Westfal; complex antigen prepared according to G. Freeman; "alkali" polysaccharides obtained by heating the bacterial mass with alkali; and exocellular polysaccharides isolated from the culture liquid. The highest activity was exhibited by Boivin's and Westfal's antigens, which inhibited the growth of most of the tumors studied. Toxicity (LD50 in mg/kg) was 130, 525, 2200, 3000, and 1700 for Boivin's antigen, Westfal's antigen, Freeman's antigen, "alkali" polysaccharides, and exocellular polysaccharides, respectively. The monosaccharide composition of the polysaccharide-containing complexes was determined chromatographically (table).
1/1

USSR

DAL'KAROV, O. D., et al., Zhurnal Eksperimental'noy i Teoreticheskoy
Fiziki, Vol 59, No 4, Oct 70, pp 1363-1367

GASPARYAN, A. L. LYUBIMOV and A. N. NIKITIN for their hospitality
and assistance in performing numerical calculations on the computer
of the Joint Institute of Nuclear Research.

2/2

1/2   015   UNCLASSIFIED   PROCESSING DATE--04DEC70
TITLE--NONRELATIVISTIC BOUND STATES IN THE NUCLEON ANTINUCLEON SYSTEM -U-

AUTHOR-(03)-DALKAROV, O.D., MANDELTSVEYG, V.B., SHAPIRO, I.S.

COUNTRY OF INFO--USSR

SOURCE--YAD. FIZ. 1970, 11(4), 889-95

DATE PUBLISHED--------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--NUCLEON INTERACTION, ANTIPARTICLE, NUCLEAR ENERGY LEVEL,
   NUCLEAR RESONANCE, EXCITED STATE, EXCITATION ENERGY, NUCLEAR ISOBAR,
   MESON INTERACTION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3007/1079   STEP NO--UR/0367/70/011/004/0889/0895

CIRC ACCESSION NO--AP0136499
                           UNCLASSIFIED

EXCITATION ENERGY OF SEVERAL HUNDREDS OF MEV CORRESPONDING TO THE
EXISTENCE OF NUCLEON ISOBARS AND AT SIMILAR TO 2 GEV THE ABOVE STUDIED
LEVELS STARTED.   FACILITY: INST. TEOR. EKSP. FIZ., MOSCOW, USSR.

UNCLASSIFIED

USSR   UDC   681.326.35

DOROSHENKO, A. V., MANDRICH, V. G., PETROV, V. Ye., RIRAKHOVSKIY, Yu. V.,
BALASHOV, L. L.

"A Very-Low-Frequency Sinusoidal Voltage Generator"

Translation: This Author's Certificate introduces a very-low-frequency
sinusoidal voltage generator equipped with a master oscillator, a digital-
-analog converter, and a DC output amplifier. To simplify the circuit
of the generator and improve its operational reliability, the digital-
-analog converter contains a stepped voltage shaper and a shaper for the
beginning and end of linear sections. These shaper circuits are inter-
connected by logic nets and a voltage divider and are connected to the
DC output amplifier. Two illustrations.

1/1

-- 11 --

USSR

MANDRIGINA, G. P.

"Application of Game Theory to Planning for Preventive Maintenance"

Riga, Avtomatika i Vychislitel'naya Tekhnika; July-August, 1971; pp 26-32

ABSTRACT: Several possibilities for the application of a game theory approach to problems in reliability theory are studied by the author. An analysis of the competence of such an approach is made and several advantages of using game theory in the solution of this problem are cited by way of illustration.

   Two figures are given. Figure 1 shows two curves for the value of a game as a function of the cost of preventive maintenance: 1 - expenses with a mixed strategy; 2 - expenses with the "test" pure strategy. Figure 2 shows a diagram for the numerical solution of a problem.

   There are three references.

1/1

USSR   UDC 576.851.48.097:616-006.04

MAYKO, I. I., KAGANS'KA, M. B., RASHBA, O. Ya., SHVAYGER, M. O., MANDRIK, T. P.,
and ZHEREBILO. O. S., Institute of Microbiology and Virology, Academy of
Sciences Ukrainian SSR

"Antitumor Activity of Polysaccharide-Containing Complexes of Escherichia coli"

Abstract: The antitumor activity of polysaccharide-containing complexes derived
from the alkali-forming mutant KM of E. coli was studied in experiments on mice
infected with sarcoma 37, lymphadenoma NK/Ly, lymphoma Ly0-1, Ehrlich's tumor,
and sarcoma K-239. The following polysaccharide-containing complexes were
used: Boivin's antigen; complex antigen prepared according to O. Westfal;
complex antigen prepared according to G. Freeman; "alkali" polysaccharides
obtained by heating the bacterial mass with alkali; and exocellular polysac-
charides isolated from the culture liquid, The highest activity was exhibited
by Boivin's and Westfal's antigens, which inhibited the growth of most of the
tumors studied. Toxicity (LD$_{50}$ in mg/kg) was 130, 525, 2200, 3000, and 1700
for Boivin's antigen, Westfal's antigen, Freeman's antigen, "alkali" polysac-
charides, and exocellular polysaccharides, respectively, The monosaccharide
composition of the polysaccharide-containing complexes was determined chroma-
tographically (table).
1/1

USSR

UDC: 772.99

MANDROSOV, V.I.

"Geometric Method of Reconstructing the Image from Surface Holograms"

Moscow, Zhurnal Nauchnoy i Prikladnoy Fotografii i Kinematografii, Vol 17, Vyp 5, 1972, pp 375-376

Abstract: Reference is made to a known method of reconstructing geometrically the image from a plane hologram. It is shown how this method can be extended to reconstruct geometrically the image from the nonplane surface hologram, if the locations of the reference and reconstructed sources are known. A drawing shows the geometric construction for determining the real and imaginary images. An analytical proof of the method is also given; this proof makes use of vector analysis.

1/1

172   036   UNCLASSIFIED   PROCESSING DATE---27NOV70

TITLE--EFFECT OF STRUCTURE FORMING SUBSTANCES ON THE CHEMICAL AND
   THERMOMECHANICAL PROPERTIES OF A CELLULOSE HYDRATE FIBER -U-

AUTHOR-(05)-MIKHAYLOV, N.V., TOKAREVA, L.G., TEREKHOVA, G.M., MANDROSOVA,
   F.M., PANOVA, L.N.

COUNTRY OF INFO--USSR

SOURCE--KHIM. VOLOKNA 1970, (2), 37-9

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY, MATERIALS

TOPIC TAGS--CELLULOSE RESIN, SYNTHETIC FIBER, DIAMINE, PHTHALATE, FILLER,
   PIGMENT, THERMOMECHANICAL PROPERTY, FATIGUE STRENGTH

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3008/0873   STEP NO--UR/0183/70/000/002/0037/0039

CIRC ACCESSION NO--AP0137901
                       UNCLASSIFIED

CIRC ACCESSION NO--AP0137901
ABSTRACT/EXTRACT--(U) GP-0-- ABSTRACT. CELLULOSE (I) FIBERS WERE MODIFIED
   WITH A NO. OF N, S, AND P CONTG. ADDITIVES.   I FIBERS MODIFIED WITH
   0.4-0.5PERCENT SV 1 COMPN. (A CONDENSATION PRODUCT OF N,N PRIME
   DI,BETA,NAPHTHYL P,PHENYLENEDIAMINE AND AMMONIUM DIAZOPHTHALATE),
   0.6PERCENT CARBON BLACK, AND 0.2PERCENT BLUE OR YELLOW PIGMENTS
   EXHIBITED SUPERIOR FATIGUE STRENGTH AND OXIDATIVE DEGRADATION
   RESISTANCE.

UNCLASSIFIED

1/2   013   UNCLASSIFIED   PROCESSING DATE--13NOV70
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COUNTRY OF INFO--USSR

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ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. TABLE OF CONTENTS: PREFACE 3,
   BASIC SYMBOLS 6,   INTRODUCTION 7.   CHAPTER I INVESTIGATION OF
   CONTINUOUS EXTREMAL SYSTEMS WHICH ARE UNDER THE EFFECT OF RANDOM
   DISTURBANCES AND IMPEDIMENTS 27.   II METHODS OF INVESTIGATION OF
   IMPULSE EXTREMAL SYSTEMS WHICH ARE UNDER THE EFFECT OF STATISTICALLY
   ASSIGNED SIGNALS, WITHOUT CONSIDERATION OF THE PROPERTIES OF THE OBJECT
   OF CONTROL 48.   III ANALYSIS OF RANDOM PROCESSES IN IMPULSE EXTREMAL
   SYSTEMS WITH CONSIDERATION OF INERTIA AND NONLINEAR PROPERTIES OF THE
   OBJECT OF CONTROL 79.   IV METHODS TO INCREASE THE RESISTANCE TO
   INTERFERENCE AND THE EFFECTIVENESS OF SYSTEMS OF EXTREMAL REGULATION
   115.   V INVESTIGATION OF MULTIDIMENSIONAL EXTREMAL SYSTEMS AT
   STATISTICALLY ASSIGNED DISTURBANCES AND INTERFERANCES 135.   APPENDICES
   4 147.   LITERATURE 167.   THIS MANUAL GIVES A SYSTEMATIZED DESCRIPTION
   OF A COMPLEX OF PROBLEMS, METHODS AND RESULTS OF INVESTIGATION OF
   EXTREMAL SYSTEMS WHICH ARE UNDER THE EFFECT OF ASSIGNED DISTURBANCES AND
   INTERFERENCES. THE BOOK IS DESIGNED FOR A WIDE RANGE OF SPECIALISTS IN
   AUTOMATIC CONTROL.

UNCLASSIFIED

USSR   UDC: 661.143:534-8

KRAVKOVA, I. A., MANDRUGIN, V. A., MEN'SHIKOVA, N. I., SAVU-
KHINA, T. A.

"Treating Suspensions of Electrophosphors and Titanium Dioxide
in an Acoustic Field"

Sb. nauch. tr. VNII lyuminoforov i osobo chist. veshchestv (Col-
lected Scientific Works of the All-Union Scientific Research
Institute of Phosphors and Extra Pure Materials), 1971, vyp. 5,
pp 114-118 (from RZh-Khimiya, No 7, Apr 72, Abstract No 7L183)

Translation: A method is proposed for preparing suspensions of electrolumines-
cent compositions of all luminescence colors as well as TiO_2 in lacquer on an
ultrasonic installation. In this connection, there is an appreciable reduction
in the time of preparation of the suspensions (by a factor of 6-20), and an
improvement in the quality of the electroluminescent and reflecting layers.
Resumé.

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UDC: 661.143

USSR

MANDRUGIN, V. A., SAVUKHINA, T. A., FILATOVA, L. A., KRAVKOVA, I. A., VAVILOV, V. A., DANILOV, V. P.

"Investigation of Electrophosphors of the CRT Type"

Sb. nauch. tr. VNII lyuminoforov i osob chist. veshchestv (Collected Scientific Works of the All-Union Scientific Research Institute of Phosphors and Extra Pure Materials), 1971, vyp. 5, pp 73-82 (from RZh-Khimiya, No 7, Apr 72, Abstract No 7L184)

Translation: Electrofluorescent compositions of yellow, blue, green and red luminescence colors are developed with a granulometric composition of 90-97% particles of less than 12 microns and a maximum particle size of 25 microns or less having a brightness of up to 170% of the standards at the "Krasnyy Khimik" Plant. A technique is developed for making electroluminescent devices on a voltage of 115 V at a frequency of 400 Hz. Bibliography of 6 titles. Resumé.

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USSR   UDC 66.012.1

LEBEDEV, L. I., MANDRYGIN, Yu. A., KhITROVSKIY, Ye. I., and KALYANOVA, S. A.,

"A Device for Statistically Monitoring the Median Interval and Percent of
Rejection"

USSR Author's Certificate, Class G 06 s 15/36, No 331390, filed 22 Apr 68,
published 13 Apr 72 (from RZh-Avtomatika Telemechanika i Vychislitel'naya
Tekhnika, No 3, Mar 73, Abstract No 3 A403 P)

Translation: A device is proposed for statistical monitoring of the median
interval and percentage of rejects. The device consists of a control unit, an
input unit, an interval counter, a unit for determining the volume of the
selection, a histogram presentation unit, a unit for determining the median
interval, and indicators. To improve the quality of monitoring of a technolog-
ical process, the device contains a reject counter-- the input to which is con-
nected to the outputs of the reject intervals of the input device -- and a unit
for comparing and indicating actual values of rejection percentage, the median
interval with given boundaries, and the result of the preceding selection. The
inputs of this unit are connected to the outputs of the damage counter and
unit for determining the median interval. To improve the visibility and

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LEBEDEV, L. I., et al., USSR Author's Certificate, Class G 06 s 15/36, No 331390, filed 22 Apr 68

reliability of the histogram presentation, the input of each of the sets of indicator elements in the columns of the histogram display is connected with the corresponding output of the receiving register decoder and through phase coordinating elements with the output of the preceding unit. Two illustrations.

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USSR

UDC: 681.332.519.2

MANDRYGIN, Yu. A.

"A Device for Determining the Arithmetic Average of Statistical Distributions"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 6, Feb 72, Author's Certificate No 328470, Division G, filed 7 Jul 70, published 2 Feb 72, p 159

Translation: This Author's Certificate introduces a device for determining the arithmetic average of statistical distributions. The device contains an arithmetic average counter and an adder-subtractor whose adding inputs are connected through switches to the outputs of a memory unit and the output of a pulse train generator. Some of the inputs of this generator are connected to the outputs of a multicycle oscillator, and the other inputs are connected to a block of sample volume counters. The output of the pulse train generator is connected to the input of a pulse generator, whose other input is connected to the adder-subtractor. The outputs of the multicycle oscillator are connected to inputs of the memory unit. Other inputs of the memory unit are connected to the input of the block of sample volume counters. As a distinguishing feature of the patent, speed is in-

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MANDRYGIN, Yu. A., USSR Author's Certificate No 328470

creased by including a parallel adder with one input connected to the
output of the memory unit, while the other is connected to the output of
the multicycle oscillator. The outputs of this adder are connected
through a switch to the subtracting inputs of the adder-subtractor.
The controlling input of the switch is connected to the pulse generator
and to the arithmetic average counter. The output of this counter is
connected to the output of the device.

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USSR

UDC 681.332:519.2

MANDRYGIN, Yu. A.

"A Device for Determining the Average Arithmetical Value of a Statistical Distribution"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, No 21, Jul 71, Author's Certificate No 308432, Division G, filed 5 Feb 70, published 1 Jul 71, p 185

Translation: This Author's Certificate introduces a device for determining the arithmetical average of a statistical distribution. The unit contains sample space counters, a divider counter, a counter of the average arithmetical value, a pulse generator, switching circuits, and a memory unit. As a distinguishing feature of the patent, in order to increase the speed and the number of multichannel inputs which can be served, the device contains a multiple-cadence generator, an adder-subtractor, and a unit for generating pulse trains. The adding inputs of the adder-subtractor are connected through switches to the outputs of the memory unit and to the output of the unit for generating pulse trains. The inputs of the pulse train generator which determine the number of the adding interval are connected to the outputs of the multiple cadence generator. The input of

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the pulse train generator which determines the beginning of operation is
connected through a commutator to the outputs of the sample space counters.
The pulse train generator output which determines the end of operation is
connected in parallel with the controlling inputs of the adder-subtractor
and the pulse generator. The output of the pulse generator is connected
in parallel with the subtracting input of the adder-subtractor and the
input of the divider counter. The output of the divider counter is con-
nected through the sample space commutator to its own reset terminal and
to the input of the counter of the average arithmetical value. The con-
trolling input of this counter is connected in parallel with the output
of the adder-subtractor and the input of the pulse generator.

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USSR   UDC 532.5:621.22

MANDRYKA, A. S.

"Optimization of Reversible Pumping Cascades With the Application of Experiment Planning in Seeking Optimal Conditions"

Translation: An approach to the solution of the problem of the optimization of reversible pumping grids on the basis of their basic hydraulic and cavitation indices is presented. The application of this method in combination with analytical methods of the theory of lattices makes it possible to seek an optimal blade system for the pump for the given operating conditions at the design stage and with a minimum amount of computational and theoretical study. The method is especially effective for the little-studied blade systems of reversible axial pumps where the obtaining of high energy-cavitation indices of the working wheel and pump presumes on the whole the presence of a large amount of experimental work. The practical application of the method is demonstrated in an example of two working wheels of reversible axial pumps. 14 ref. Author's abstract.

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USSR   UDC 532.5:621.22

MANDRYKA, A. S.

"Study of Flow Separation in a Blade System of a Reversible Axial Pump"

Issledovaniye otryva potoka v lopastnoy sisteme kolesa reversivnogo osevogo nasosa (cf. English above), Khar'kov Polytechnical Institute, Khar'kov, 1972, 10 pp, ill. (Manuscript deposited at the Central Institute of the Scientific and Technical Institute of Petrochemical Machines, No. 146, from 14 Sep 1972) (from RZh-Mekhanika, No 3, Mar 73, Abstract No 3B756 DEP)

Translation: It is shown that generalized empirical relationships for determining flow separation that give good results applicable to pumps in ordinary use become inapplicable in the case of reversible pumps. The following shape of the head characteristic $H - Q$ under small supply conditions is associated with the separation flow over the blades of the working wheel, and this is a result of increased angles of attack and the small curvature of the profiles that is characteristic of reversible pumps. It was established by computational means that the application of hydrodynamic methods of the theory of grids makes it possible to determine the geometric parameters of working parts and also the operating mode that ensure separationless flow in the cavity of the working pipe, which is a necessary condition for producing high power and cavitation in the reversible pump. 11 ref. Author's abstract.
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ELECTRICAL ENGINEERING

Circuit Elements

USSR   UDC   621.396.69:621.319.4

BOGORODITSKIY, N. P., GEDZYUN, V. A., MANDRYKA, N. A.

"High-Voltage Ceramic Capacitors"

Vysokovol'tnyye keramicheskiye kondensatory (cf. English above), Moscow, "Sov. radio",
1970, 207 pp, ill. 53 k. (from RZh-Radiotekhnika, No 10, Oct 70, Abstract No 10V330 K)

Translation: The book deals with problems connected with the design of high-voltage
ceramic capacitors. Also given are the results of studies of the electrophysical
properties of the radio ceramic used as the dielectric in these capacitors. Chapter
1 takes up problems of electrical conductivity, polarization and losses in ceramic
materials, chapter 2 deals with problems of the electrical strength of radio ceramic
material and possible mechanisms of material fracture. The mechanical strength of
radio ceramic materials is described in chapter 3. Chapter 4 contains a description
of procedures for testing parts made from radio ceramic, and the equipment used in
these tests. Chapter 5 outlines the elements of calculating individual capacitors,
constructing series of capacitors, and also information on existing fixed ceramic
capacitors for high working voltages. The book is written for engineers and techni-
cians employed in the development and manufacture of high-voltage ceramic capacitors,
radio electronic power equipment, and also for students and teachers in electronics
academies. 93 illustrations, 45 tables, bibliography of 69 titles. Resumé.
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USSR   UDC 669.26'854'794:620.193.41

TAVADZE, F. N., MIKADZE, O. I., RUDOY, A. P., and MANDZHAGALADZE, S. N.,
Institute of Metallurgy, Academy of Sciences Georgian SSR

"Influence of Lanthanum and Yttrium on Corrosion Resistance of Chromium in Sulfuric Acid"

Abstract: This work presents a study of the influence of lanthanum and
yttrium on the corrosion resistance of chromium in sulfuric acid at 20
and 100° C. The material used in the study was electrolytically refined
chromium containing 0.006% N, 0.004% O, less than 0.04% Si, 0.005% Ni,
0.01% Fe, 0.006% Al, 0.002% S, 0.003% Cu. The content of the rem in
the chromium alloys was 0.24-1.48% La, 0.28-2.83% Y. One peculiarity
of the process of corrosion of chromium alloys with lanthanum and yttrium
in sulfuric acid solutions is that the maximum rate is observed in the
initial period of the test, with subsequent stabilization. Lanthanum and
yttrium are anodic inclusions and are etched out in sulfuric acid. The
structure of the matrix does not influence the corrosion resistance of
the alloys of chromium in 50% sulfuric acid, but does in a 30% solution.
The introduction of 0.28% Y to chromium activates the chromium, while
0.68% La does not damage its passivity at room temperature.

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